## CLAIMS

What is claimed is:

1. A method for optically screening sample materials for at least one characteristic, the method comprising:

(a) providing a library of at least four sample materials upon a substrate;

(b) directing an electromagnetic wavefront through a partial mirror at a surface of each of the at least four sample materials wherein the surface of each of the at least four sample materials is substantially non-planar;

(c) monitoring a response of the electromagnetic wavefront after the wavefront encounters the at least four sample materials; and

(d) correlating the response of the electromagnetic wavefront to a characteristic of the at least four sample materials;

wherein steps (a) through (d) are performed without substantially contacting the at least four sample materials with any probe.

2. A method as in claim 1 wherein the at least four sample material are provided upon a substrate with a flexible portion.

3. A method as in claim 1 wherein the characteristic of the at least four sample materials is topography of a surface of the at least four sample materials.

4. A method as in claim 3 further comprising correlating the topography of the surface of the at least four sample materials to a volume of the at least four sample material.

5. A method as in claim 4 wherein a mass of the at least four sample materials is predetermined and the method further comprises correlating the mass of the at least four sample materials and the volume of the at least four sample materials to a density of the at least four sample materials.

6. A method as in claim 1 wherein steps (b) through (d) are repeated for determining a change in the characteristic.

7. A method as in claims 1 and 6 wherein said characteristic is size of the at least four sample material

8. A method as in claim 6 wherein the characteristic is a volume of the at least four sample materials.

9. A method as in claim 6 wherein each of the at least four sample materials is supported upon a suspended platform.

10. A method as in claim 9 further comprising applying a stimulus to the at least four sample materials prior to the step of monitoring the response of the electromagnetic wavefront wherein the stimulus causes movement of the at least four sample materials at least during a portion of the step of monitoring the response of the electromagnetic wavefront.

11. A method as in claim 10 wherein the movement is at least partially oscillation.

12. A method as in claim 11 wherein the characteristic of the at least four sample materials is AC resonance.

13. A method as in claim 1 wherein said electromagnetic wavefront is provided by an interferometer.

14. A method as in claim 1 wherein the electromagnetic wavefront is provide by a laser.

15. A method as in claim 1 wherein the electromagnetic wavefront

has a narrow bandwidth wavelength.

16. A method as in claim 1 wherein the electromagnetic wavefront is a single wavelength monotonic light.

17. A method for optically screening sample materials for topography, the method comprising:

(a) providing a library of at least four sample materials;

(b) directing an electromagnetic wavefront simultaneously at a surface of each of the at least four sample materials;

(c) monitoring a reflected portion of the electromatic wavefront that is reflected off of the at least for sample materials; and

(d) correlating the reflected portion of the electromagnetic wavefront to a topography of each of the at least four sample materials.

18. A method as in claim 17 wherein steps (a) through (d) are performed without contacting the at least four sample materials with a solid object.

19. A method as in claim 17 further comprising:

(e) correlating the topography of the surface of the at least four sample materials to a volume of the at least four sample material.

20. A method as in claim 19 wherein a mass of the at least four sample materials is predetermined and the method further comprises correlating the mass of the at least four sample materials and the volume of the at least four sample materials to a density of the at least four sample materials.

21. A method as in claim 17 wherein steps (b) through (d) are repeated for determining a change in the topography of the at least four sample materials.

22. A method as in claim 21 wherein each of the at least four sample materials is supported upon a suspended platform.

23. A method as in claim 22 further comprising applying a stimulus to the at least four sample materials prior to the step of monitoring the reflected portion of the electromagnetic wavefront wherein the stimulus causes movement of the at least four sample materials at least during a portion of the step of monitoring the reflected portion of the electromagnetic wavefront.

24. A method as in claim 23 wherein the movement is at least partially oscillation.

25. A method as in claim 24 wherein the characteristic of the at least four sample materials is AC resonance.

26. A method as in claim 17 wherein said electromagnetic wavefront is provided by an interferometer.

27. A method as in claim 17 wherein the electromagnetic wavefront is provide by a laser.

28. A method as in claim 17 wherein the electromagnetic wavefront has a narrow bandwidth wavelength.

29. A method as in claim 17 wherein the electromagnetic wavefront is a single wavelength monotonic light.

30. A method for optically screening an array of sample materials to determine density of the array of sample materials, comprising:

(a) providing a library of at least sixteen sample materials wherein

each of the at least sixteen sample materials are supported by one or more substrates and wherein each of the at least sixteen sample materials is a polymeric product of a separate polymer synthesis reaction;

(b) directing an electromagnetic wavefront at each of the at least sixteen sample materials with a laser wherein the laser is at least a portion of an analytical system;

(c) monitoring the electromagnetic wavefront with a monitor of the analytical system after the wavefront is reflected from a surface of each of the at least sixteen sample materials to determine distances of the surface from a reference location for determining the topography of the surface as mathematical function;

(d) correlating the topography of the surface of the each of the at least sixteen sample materials to a volume of the at least sixteen sample materials by integrating the mathematical function over an area defined by the surface of each of the at least sixteen sample materials;

(e) repeating steps (b)-(d) to determine any change in the density of the at least sixteen sample materials.